

EMERGENCY DEPARTMENT VISITS FOR OVERDOSE BY OPIOID, UNSPECIFIED SUBSTANCE AND HEROIN AMONG VIRGINIA RESIDENTS

August 2018

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Please direct questions or comments to the Division of Surveillance and Investigation,
Enhanced Surveillance Team: syndromic@vdh.virginia.gov

Background

The Virginia Department of Health (VDH) currently receives data on visits to 80[†] acute care hospital emergency departments (EDs) and 17 free-standing EDs in Virginia for purposes of public health surveillance. The purpose of this report is to characterize ED visit trends for unintentional overdose by opioids and heroin among Virginia residents.

Chief complaints and discharge diagnoses of ED visits are analyzed by VDH to identify and monitor issues of public health concern across Virginia. The chief complaint is a free-text field that captures the patient's primary reason for seeking medical care as interpreted by the ED registration staff. The discharge diagnosis is a coded field using standardized values defined by the International Classification of Diseases (ICD) 9th and 10th Revision or SNOMED Clinical Terms (CT) code sets.

Methodology

ED visits defined as **unintentional overdose by opioid or unspecified substance** include those with medical and non-medical use of a prescription opioid or where the substance is not specified, and must meet the following criteria:

- **Inclusion** criteria for Chief Complaint or Discharge Diagnosis: Terms: *overdose, opioid, opiate, opium, morphine, hydrocodone, oxycodone, hydromorphone, oxymorphone, codeine, buprenorphine fentanyl, methadone, naloxone, tramadol, suboxone, or medication and drug brand names (Dilaudid, Narcan, OxyContin, Percocet, Vicodin, etc.)*; ICD-9 codes: 965.00, 965.02, 965.09, E850.1, E850.2; ICD-10 codes: T40.0X1, T40.0X4, T40.2X1, T40.2X4, T40.3X1, T40.3X4, T40.4X1, T40.4X4, T40.601, T40.604, T40.691, T40.694, F11.10, F11.120, F11.121, F11.122, F11.129, F11.20, F11.220, F11.221, F11.222, F11.229, F11.90, F11.920, F11.921, F11.922, F11.929; SNOMED CT codes: 295165009, 242253008, 297199006, 295213004.
- **Exclusion** criteria for Chief Complaint or Discharge Diagnosis: Terms: *withdrawal, detoxification, suicide, intentional, self-harm, or any specified non-opioid medication or drug, heroin*; ICD-9 codes: E95-97, V62.84, 965.01; ICD-10 codes: R45.851, T40.1X1A, T40.1X4A; SNOMED CT code: 295174006.

ED visits defined as **unintentional overdose by heroin** must meet the following criteria:

- **Inclusion** criteria from Chief Complaint or Discharge Diagnosis: Terms: *heroin, speedball, dope*; ICD-9 codes: 965.01, E850.0; ICD-10 codes: T40.1X1A, T40.1X4A; SNOMED CT codes: 295174006, 295175007, 295176008.
- **Exclusion** criteria from Chief Complaint or Discharge Diagnosis: Terms: *withdrawal, detoxification, suicide, intentional, self-harm*; ICD-9 codes: E95-97, V62.84; ICD-10 codes: R45.851.

VDH revises the case definitions above based on guidance from the Centers for Disease Control and Prevention (CDC) as well as findings from ongoing data quality evaluations. More information on the case definition revisions, including historic definitions, can be found [here](#) on the VDH website.

ED visits for unintentional overdose by opioid or unspecified substance and heroin are presented by count or rate per 100,000 population. Rates are calculated using U.S. Census Bureau 2017 population estimates. To protect confidentiality and maintain accurate rate calculations, ED visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed in this report. Counts of 0 are included.

The geographic location is assigned based on the patient's residential zip code provided. A single zip code may span multiple city and county localities in Virginia. If a patient resides in such a zip code, the visit is assigned to the locality where the majority of the population resides. Virginia city and county populations combined to calculate a rate per 100,000 population because of zip codes spanning multiple localities can be found in [Appendix 1](#).

Highlights for August 2018

Note: While the revised [case definitions](#) have increased the sensitivity of capturing valid unintentional overdoses among ED visits reported to VDH, the interpretation of the overdose trends and data found in this report are not impacted.

Statewide ED visits for overdose by opioid or unspecified substance among Virginia residents increased by 15% from July 2018 (633 visits) to August 2018 (726 visits) ([Figure 1A](#)). This is the largest number of visits in a single month since June 2017 (747 visits). The total Year-to-Date (January to August) count of ED visits is 14% lower in 2018 as compared to 2017, and 12% lower as compared to 2016 ([Figure 1B](#)).

- Among the five [VDH Health Planning Regions](#), the Central and Southwest regions saw a visit increase of 40% (62 additional visits, Rate 15 per 100,000) and 24% (38 additional visits, Rate 14.4 per 100,000), respectively, from July 2018. The lowest rate was in the Northern region (4.5 per 100,000) ([Figure 1C](#)). The Year-to-Date 2018 count for all health regions are lower than their 2017 visit count. The Year-to-Date counts for Eastern and Northern regions have decreased annually since 2016 ([Figure 1D](#)).
- By sex, males contributed a statistically higher proportion of visits for overdose by opioid or unspecified substance compared to females in August 2018. This is only the third time a significant difference has been observed in the last 12 months. ([Figure 1E](#)).
- By age group, the number of visits for overdose by opioid or unspecified substance among 25-34 year olds increased by 41% and remained the age group with the highest rate (15.9 per 100,000) ([Figure 1F](#)). Five of the seven age groups experienced an increase in August 2018.

Statewide ED visits for overdose by heroin among Virginia residents increased by 17% from July 2018 (101 visits) to August 2018 (118 visits) ([Figure 2A](#)). The total Year-to-Date (January to August) count of ED visits is 20% lower in 2018 compared to 2017, and 2% lower as compared to 2016 ([Figure 2B](#)).

- Among the five [VDH Health Planning Regions](#), rates of visits for overdose by heroin were highest in the Central (2.4 per 100,000) and this was the highest rate in the Central region since February 2017 (2.4 per 100,000). The Southwest and Eastern regions saw a visit increase of 31% (1.3 per 100,000) and 27% (2.1 per 100,000), respectively, from July 2018. The lowest rate was in the Northern region (0.5 per 100,000) ([Figure 2C](#)). The Year-to-Date 2018 visit count for all health regions are lower than their 2017 visit count, except for the Central region ([Figure 2D](#)).
- By sex, males contributed a statistically higher proportion of visits for overdose by heroin compared to females in August 2018, and this significant rate difference has been observed since April 2018 ([Figure 2E](#)).
- By age group, the rate of visits for overdose by heroin among 25-34 year olds increased by 42% and remained the age group with highest rate (3.7 per 100,000) in August 2018 ([Figure 2F](#)). This age group has been higher than any other age groups since January 2015 when reporting by VDH began. Four of the seven age groups experienced an increase in August 2018.

Emergency Department Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents

Figure 1A. Count of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month, 2016 - 2018.

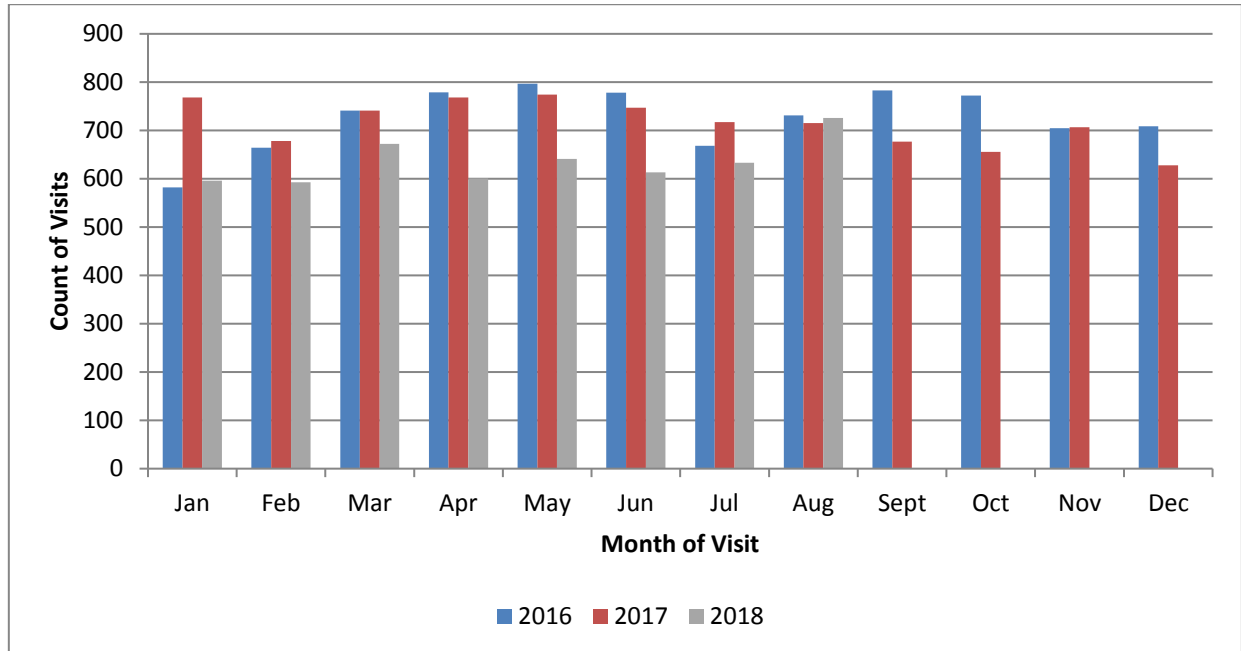


Figure 1B. Year-to-Date Count (January-August) of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Year.

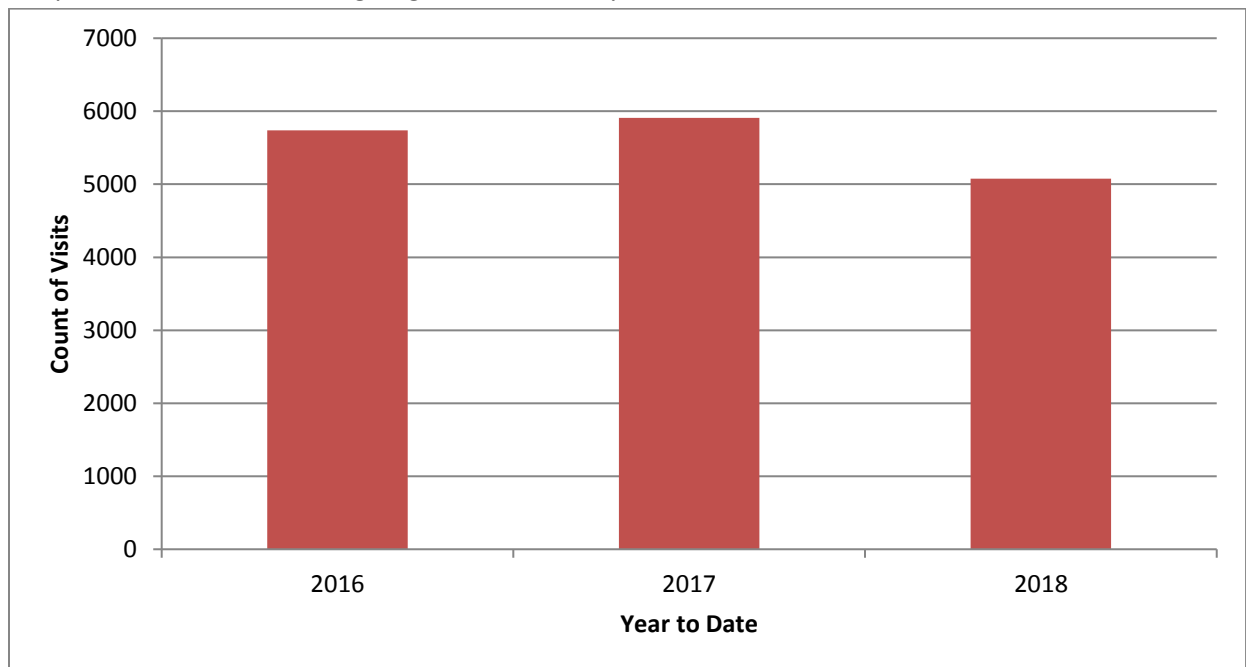


Figure 1C. Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Health Region, Most Recent 12 Months.

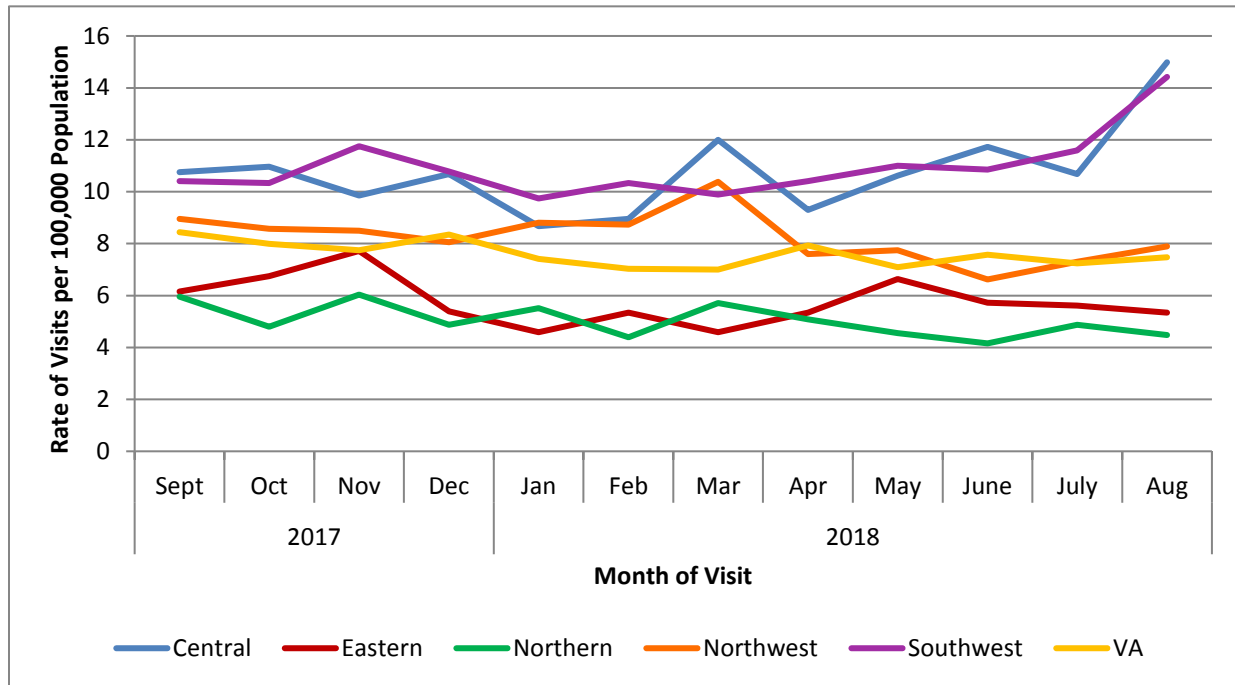


Figure 1D. Year-to-Date Count (January-August) of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Year and Region.

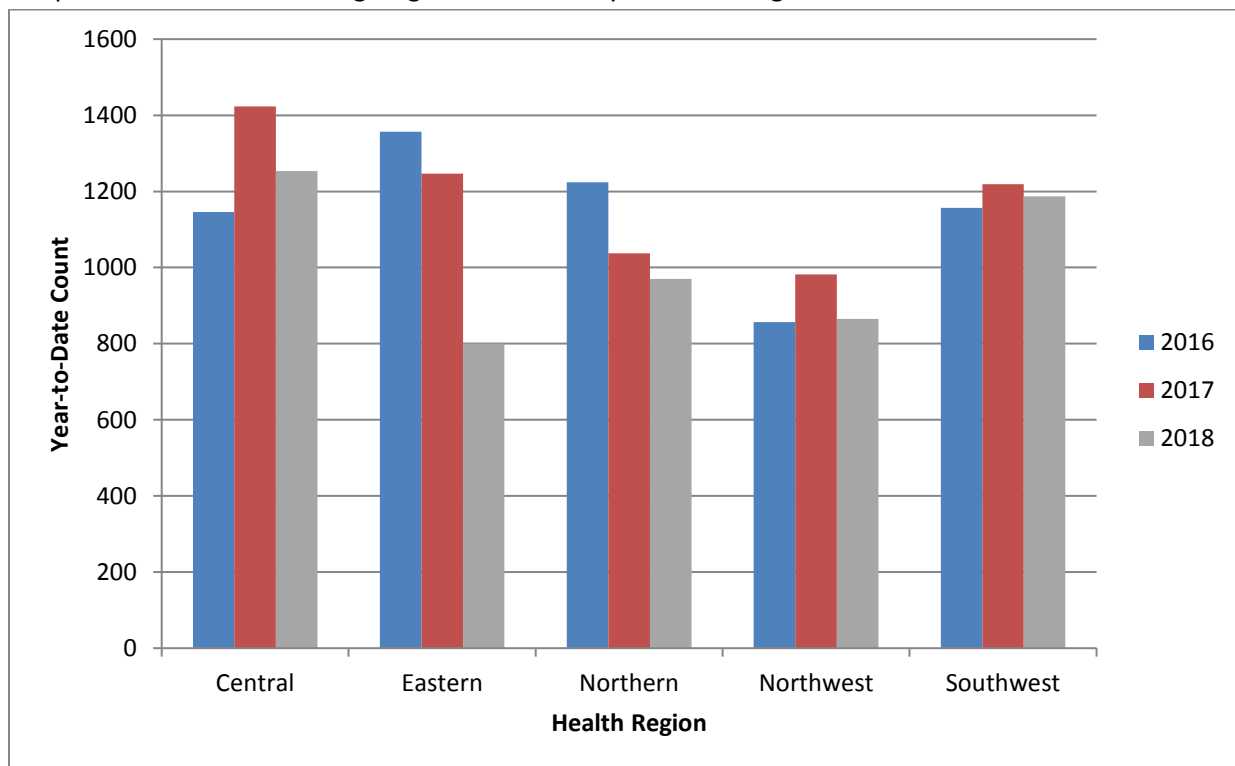


Figure 1E. Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Sex, Most Recent 12 Months.

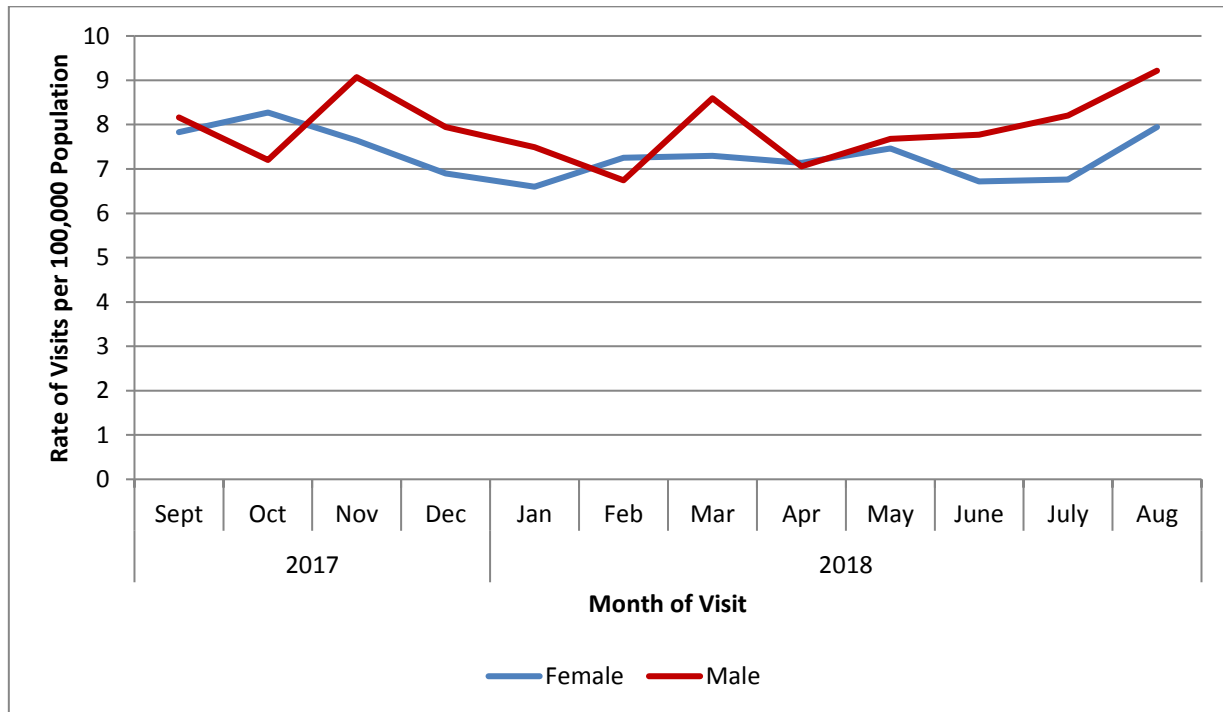


Figure 1F. Rate of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Age Group (Years), Most Recent 12 Months.

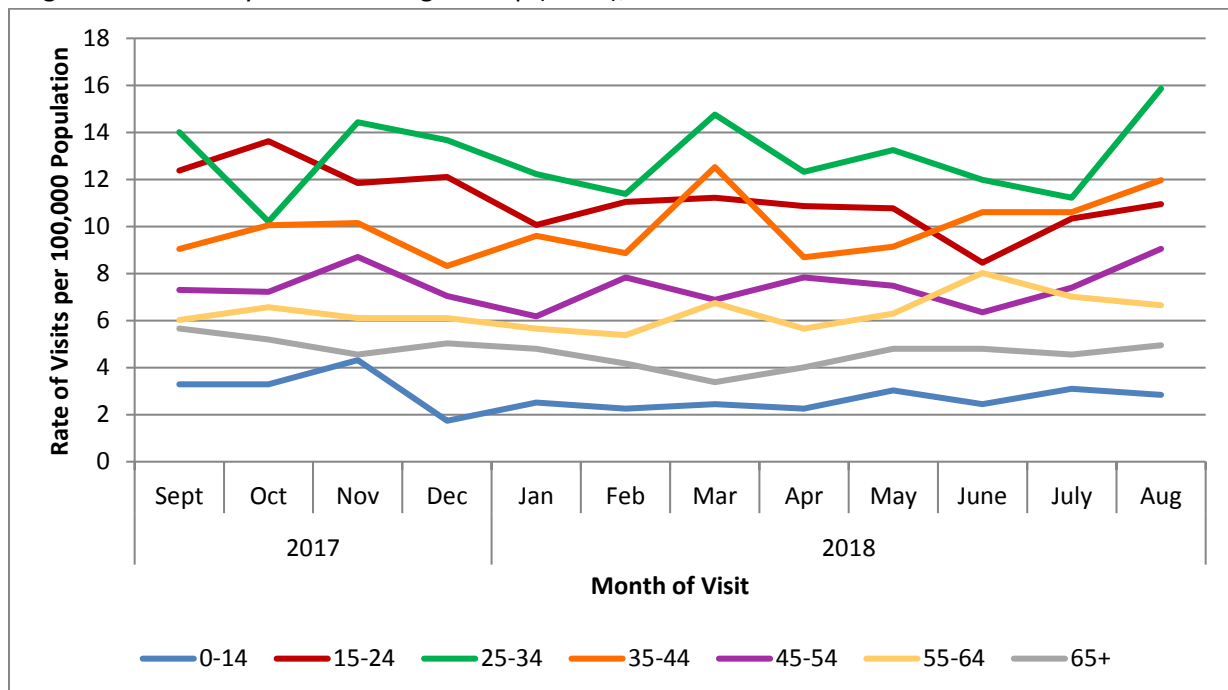


Table 1A. Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Health District, Most Recent 5 Months^{†*}

| Health District | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | | 5-month Average | |
|-----------------------|--------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|--------------------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count [^] | Rate |
| Alexandria | 160,035 | 9 | 5.6 | 11 | 6.9 | * | * | 7 | 4.4 | 8 | 5.0 | 8 | 4.9 |
| Alleghany | 178,499 | 16 | 8.9 | 21 | 11.8 | 23 | 12.9 | 21 | 11.8 | 24 | 13.4 | 21 | 11.8 |
| Arlington | 234,965 | 10 | 4.3 | * | * | 7 | 3.0 | 7 | 3.0 | 7 | 3.0 | 7 | 2.9 |
| Central Shenandoah | 299,042 | 17 | 5.7 | 25 | 8.4 | 19 | 6.4 | 27 | 9.0 | 21 | 7.0 | 22 | 7.3 |
| Central Virginia | 261,254 | 17 | 6.5 | 27 | 10.3 | 21 | 8.0 | 21 | 8.0 | 26 | 10.0 | 22 | 8.6 |
| Chesapeake | 240,397 | 17 | 7.1 | 22 | 9.2 | 19 | 7.9 | 19 | 7.9 | 15 | 6.2 | 18 | 7.7 |
| Chesterfield | 390,030 | 24 | 6.2 | 36 | 9.2 | 47 | 12.1 | 44 | 11.3 | 52 | 13.3 | 41 | 10.4 |
| Chickahominy | 157,294 | 16 | 10.3 | 8 | 5.1 | 10 | 6.4 | 15 | 9.5 | 14 | 8.9 | 13 | 8.0 |
| Crater | 155,262 | 10 | 6.4 | 24 | 15.5 | 15 | 9.7 | 11 | 7.1 | 14 | 9.0 | 15 | 9.5 |
| Cumberland Plateau | 104,439 | 16 | 15.0 | 15 | 14.4 | 11 | 10.5 | 10 | 9.6 | 8 | 7.7 | 12 | 11.4 |
| Eastern Shore | 44,391 | * | * | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.4 |
| Fairfax | 1,187,113 | 67 | 5.7 | 64 | 5.4 | 62 | 5.2 | 66 | 5.6 | 53 | 4.5 | 62 | 5.3 |
| Hampton | 134,669 | 10 | 7.4 | 14 | 10.4 | 9 | 6.7 | 5 | 3.7 | 5 | 3.7 | 9 | 6.4 |
| Henrico | 327,898 | 40 | 12.3 | 41 | 12.5 | 45 | 13.7 | 36 | 11.0 | 64 | 19.5 | 45 | 13.8 |
| Lenowisco | 88,145 | 8 | 9.0 | 5 | 5.7 | 11 | 12.5 | 11 | 12.5 | 8 | 9.1 | 9 | 9.7 |
| Lord Fairfax | 235,443 | 26 | 11.2 | 16 | 6.8 | 19 | 8.1 | 9 | 3.8 | 23 | 9.8 | 19 | 7.9 |
| Loudoun | 398,080 | 17 | 4.4 | 23 | 5.8 | 14 | 3.5 | 16 | 4.0 | 20 | 5.0 | 18 | 4.5 |
| Mount Rogers | 189,063 | 26 | 13.7 | 20 | 10.6 | 21 | 11.1 | 24 | 12.7 | 23 | 12.2 | 23 | 12.1 |
| New River | 182,993 | 11 | 6.0 | 21 | 11.5 | 10 | 5.5 | 10 | 5.5 | 15 | 8.2 | 13 | 7.3 |
| Norfolk | 244,703 | 19 | 7.8 | 21 | 8.6 | 28 | 11.4 | 18 | 7.4 | 18 | 7.4 | 21 | 8.5 |
| Peninsula | 349,735 | 9 | 2.6 | 16 | 4.6 | 11 | 3.1 | 14 | 4.0 | 11 | 3.1 | 12 | 3.5 |
| Piedmont | 102,387 | 7 | 6.8 | 8 | 7.8 | 10 | 9.8 | 6 | 5.9 | 15 | 14.7 | 9 | 9.0 |
| Pittsylvania-Danville | 102,388 | 10 | 9.7 | 13 | 12.7 | 16 | 15.6 | 17 | 16.6 | 15 | 14.7 | 14 | 13.8 |
| Portsmouth | 94,572 | 15 | 15.7 | 13 | 13.7 | 12 | 12.7 | 17 | 18.0 | 21 | 22.2 | 16 | 16.5 |
| Prince William | 521,115 | 24 | 4.7 | 13 | 2.5 | 17 | 3.3 | 26 | 5.0 | 24 | 4.6 | 21 | 4.0 |
| Rappahannock | 364,840 | 19 | 5.3 | 25 | 6.9 | 16 | 4.4 | 13 | 3.6 | 16 | 4.4 | 18 | 4.9 |
| Rappahannock-Rapidan | 177,418 | 25 | 14.3 | 15 | 8.5 | 16 | 9.0 | 27 | 15.2 | 18 | 10.1 | 20 | 11.4 |
| Richmond City | 227,032 | 32 | 14.3 | 32 | 14.1 | 34 | 15.0 | 34 | 15.0 | 47 | 20.7 | 36 | 15.8 |
| Roanoke | 99,837 | 13 | 13.0 | 10 | 10.0 | 11 | 11.0 | 19 | 19.0 | 41 | 41.1 | 19 | 18.8 |
| Southside | 81,493 | 5 | 6.1 | * | * | 8 | 9.8 | 8 | 9.8 | 10 | 12.3 | 7 | 8.6 |
| Thomas Jefferson | 252,588 | 14 | 5.6 | 22 | 8.7 | 18 | 7.1 | 21 | 8.3 | 27 | 10.7 | 20 | 8.1 |
| Three Rivers | 141,271 | 5 | 3.5 | 9 | 6.4 | * | * | * | * | 7 | 5.0 | 5 | 3.7 |
| Virginia Beach | 450,435 | 14 | 3.1 | 18 | 4.0 | 13 | 2.9 | 21 | 4.7 | 16 | 3.6 | 16 | 3.6 |
| West Piedmont | 138,479 | 23 | 16.6 | 16 | 11.6 | 22 | 15.9 | 23 | 16.6 | 34 | 24.6 | 24 | 17.0 |
| Western Tidewater | 152,715 | 9 | 5.9 | 10 | 6.5 | 11 | 7.2 | 8 | 5.2 | 6 | 3.9 | 9 | 5.8 |
| VIRGINIA TOTAL | 8,470,020 | 601 | 7.1 | 641 | 7.6 | 613 | 7.2 | 633 | 7.5 | 726 | 8.6 | 643 | 7.6 |

[†] Population based on 2017 U.S. Census estimates available at www.census.gov/popest/

* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

[^] The 5-month average count was rounded to the nearest integer.

¶ Refer to [Appendix 2](#) for a summary of data reporting changes that should be considered when interpreting this report.

Table 1B. Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and City/County Locality, Most Recent 5 Months^{†**}

| Locality | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|----------------------------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Accomack County | 32,545 | * | * | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Albemarle County [†] | 155,721 | * | * | 9 | 10.3 | * | * | 8 | 7.1 | 10 | 10.3 |
| Alleghany County [†] | 20,653 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | * | * |
| Amelia County | 13,020 | * | * | * | * | * | * | * | * | * | * |
| Amherst County | 31,594 | * | * | * | * | * | * | * | * | * | * |
| Appomattox County | 15,681 | * | * | * | * | 0 | 0 | * | * | * | * |
| Arlington County | 234,965 | 10 | 4.3 | * | * | 7 | 3.0 | 7 | 3.0 | 7 | 3.0 |
| Augusta County [†] | 121,999 | 5 | 6.6 | * | * | 7 | 9.0 | * | * | 7 | 13.9 |
| Bath County | 4,297 | * | * | * | * | 0 | 0 | * | * | 0 | 0 |
| Bedford County | 77,974 | 5 | 6.4 | 7 | 9.0 | 7 | 9.0 | 7 | 9.0 | 10 | 12.8 |
| Bland County | 6,350 | * | * | 0 | 0 | 0 | 0 | 0 | 0 | * | * |
| Botetourt County | 33,192 | * | * | * | * | * | * | * | * | * | * |
| Brunswick County | 16,244 | 0 | 0 | * | * | * | * | * | * | * | * |
| Buchanan County | 21,514 | * | * | * | * | * | * | * | * | * | * |
| Buckingham County | 17,065 | * | * | * | * | 0 | 0 | 0 | 0 | * | * |
| Campbell County | 55,010 | * | * | 6 | 10.9 | * | * | * | * | * | * |
| Caroline County | 30,461 | * | * | 0 | 0 | * | * | 5 | 16.4 | 5 | 16.4 |
| Carroll County | 29,708 | 6 | 20.2 | * | * | * | * | 6 | 20.2 | 6 | 20.2 |
| Charles City County | 7,004 | * | * | 0 | 0 | 0 | 0 | * | * | 0 | 0 |
| Charlotte County | 12,119 | * | * | * | * | * | * | * | * | * | * |
| Chesterfield County [†] | 361,429 | 22 | 6.6 | 33 | 10.0 | 39 | 11.6 | 38 | 11.3 | 45 | 13.8 |
| Clarke County | 14,508 | 0 | 0 | 0 | 0 | 0 | 0 | * | * | * | * |
| Craig County | 5,062 | 0 | 0 | 0 | 0 | * | * | * | * | * | * |
| Culpeper County | 51,282 | * | * | * | * | * | * | 12 | 23.4 | * | * |
| Cumberland County | 9,811 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | * | * |
| Dickenson County | 14,782 | 0 | 0 | * | * | * | * | * | * | 0 | 0 |
| Dinwiddie County | 28,208 | 0 | 0 | * | * | * | * | * | * | * | * |
| Essex County | 11,028 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | * | * |
| Fairfax County [†] | 1,187,113 | 66 | 5.6 | 64 | 5.4 | 61 | 5.2 | 64 | 5.6 | 52 | 4.5 |
| Fauquier County | 69,465 | 9 | 13.0 | 8 | 11.5 | 7 | 10.1 | 7 | 10.1 | 6 | 8.6 |
| Floyd County | 15,755 | 0 | 0 | * | * | 0 | 0 | * | * | 0 | 0 |
| Fluvanna County | 26,452 | * | * | 0 | 0 | * | * | 0 | 0 | * | * |
| Franklin County | 56,445 | 0 | 0 | 6 | 10.6 | * | * | 8 | 14.2 | 9 | 15.9 |
| Frederick County [†] | 114,416 | 5 | 11.4 | * | * | * | * | 0 | 0 | * | * |
| Giles County | 16,837 | * | * | 0 | 0 | 0 | 0 | * | * | * | * |
| Gloucester County | 37,292 | * | * | 0 | 0 | * | * | 0 | 0 | * | * |
| Goochland County | 22,685 | * | * | * | * | * | * | * | * | * | * |

| Locality | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|------------------------------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Grayson County [†] | 22,290 | * | * | * | * | * | * | * | * | * | * |
| Greene County | 19,612 | * | * | 0 | 0 | * | * | 6 | 30.6 | * | * |
| Greensville County [†] | 16,961 | 0 | 0 | * | * | * | * | * | * | * | * |
| Halifax County | 34,563 | * | * | * | * | * | * | * | * | * | * |
| Hanover County | 105,923 | 12 | 11.3 | 6 | 5.7 | 8 | 7.6 | 7 | 6.6 | 12 | 11.3 |
| Henrico County | 327,898 | 40 | 12.2 | 41 | 12.5 | 45 | 13.7 | 36 | 11.0 | 64 | 19.5 |
| Henry County [†] | 64,369 | 21 | 32.6 | 9 | 14.0 | 16 | 24.9 | 15 | 23.3 | 22 | 34.2 |
| Highland County | 2,212 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Isle of Wight County | 36,552 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | * | * |
| James City County | 75,524 | 6 | 7.9 | * | * | * | * | 6 | 7.9 | * | * |
| King and Queen County | 7,003 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | 0 | 0 |
| King George County | 26,337 | 5 | 19.0 | 0 | 0 | 0 | 0 | * | * | * | * |
| King William County | 16,708 | 0 | 0 | * | * | 0 | 0 | * | * | * | * |
| Lancaster County | 10,788 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | * | * |
| Lee County | 23,758 | * | * | * | * | * | * | * | * | * | * |
| Loudoun County | 398,080 | 17 | 4.3 | 23 | 5.8 | 14 | 3.5 | 16 | 4.0 | 20 | 5.0 |
| Louisa County | 35,860 | * | * | 6 | 16.7 | 5 | 13.9 | * | * | * | * |
| Lunenburg County | 12,235 | 0 | 0 | 0 | 0 | * | * | 0 | 0 | 0 | 0 |
| Madison County | 13,277 | 0 | 0 | 0 | 0 | * | * | * | * | * | * |
| Mathews County | 8,779 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mecklenburg County | 30,686 | * | * | 0 | 0 | 5 | 16.3 | * | * | 6 | 19.6 |
| Middlesex County | 10,679 | * | * | 0 | 0 | * | * | 0 | 0 | * | * |
| Montgomery County [†] | 116,217 | 7 | 6.0 | * | * | * | * | * | * | 5 | 6.9 |
| Nelson County | 14,943 | * | * | 0 | 0 | * | * | 0 | 0 | * | * |
| New Kent County | 21,682 | * | * | * | * | * | * | * | * | * | * |
| Northampton County | 11,846 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Northumberland County | 12,275 | * | * | * | * | * | * | * | * | * | * |
| Nottoway County | 15,434 | * | * | * | * | * | * | * | * | 5 | 32.4 |
| Orange County | 36,073 | 12 | 33.3 | 6 | 16.6 | * | * | 6 | 16.6 | 6 | 16.6 |
| Page County | 23,731 | 5 | 21.1 | * | * | 5 | 21.1 | 0 | 0 | * | * |
| Patrick County | 17,665 | * | * | * | * | * | * | 0 | 0 | * | * |
| Pittsylvania County [†] | 102,388 | * | * | 5 | 12.7 | * | * | 7 | 16.6 | 5 | 14.7 |
| Powhatan County | 28,601 | 0 | 0 | 0 | 0 | 5 | 17.5 | * | * | * | * |
| Prince Edward County | 22,703 | * | * | * | * | * | * | 0 | 0 | 0 | 0 |
| Prince George County | 92,180 | * | * | * | * | 0 | 0 | 0 | 0 | * | * |
| Prince William County [†] | 521,115 | 23 | 4.6 | 11 | 2.5 | 14 | 3.3 | 21 | 5.0 | 22 | 4.6 |
| Pulaski County | 34,184 | * | * | 14 | 41.0 | 6 | 17.6 | * | * | * | * |
| Rappahannock County | 7,321 | * | * | 0 | 0 | * | * | 0 | 0 | * | * |
| Richmond County | 8,939 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | 0 | 0 |
| Roanoke County [†] | 219,429 | 9 | 12.3 | 8 | 10.5 | 10 | 14.1 | 12 | 16.4 | 11 | 27.3 |

| Locality | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|------------------------------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Rockbridge County [†] | 36,092 | * | * | * | * | * | * | * | * | 0 | 0 |
| Rockingham County [†] | 134,442 | * | * | 7 | 6.7 | * | * | 6 | 5.2 | * | * |
| Russell County | 27,048 | 5 | 18.5 | * | * | * | * | * | * | * | * |
| Scott County | 21,865 | 0 | 0 | * | * | 0 | 0 | * | * | 0 | 0 |
| Shenandoah County | 43,225 | * | * | * | * | * | * | * | * | * | * |
| Smyth County | 30,656 | 5 | 16.3 | * | * | * | * | * | * | * | * |
| Southampton County [†] | 25,926 | * | * | * | * | * | * | * | * | * | * |
| Spotsylvania County | 133,033 | * | * | 15 | 11.3 | 9 | 6.8 | 6 | 4.5 | 8 | 6.0 |
| Stafford County | 146,649 | 8 | 5.5 | 8 | 5.5 | * | * | * | * | * | * |
| Surry County | 6,540 | 0 | 0 | * | * | * | * | 0 | 0 | 0 | 0 |
| Sussex County | 11,373 | * | * | 0 | 0 | * | * | * | * | * | * |
| Tazewell County | 41,095 | 9 | 21.9 | 9 | 21.9 | 5 | 12.2 | 6 | 14.6 | * | * |
| Warren County | 39,563 | 6 | 15.2 | * | * | * | * | * | * | * | * |
| Washington County [†] | 71,177 | * | * | 6 | 9.8 | 6 | 9.8 | 5 | 7.0 | * | * |
| Westmoreland County | 17,780 | * | * | * | * | 0 | 0 | 0 | 0 | 0 | 0 |
| Wise County [†] | 42,522 | * | * | * | * | * | * | 5 | 14.1 | 5 | 11.8 |
| Wythe County | 28,882 | 5 | 17.3 | 5 | 17.3 | * | * | 5 | 17.3 | * | * |
| York County | 67,739 | * | * | * | * | * | * | * | * | * | * |
| Alexandria City | 160,035 | 9 | 5.6 | 11 | 6.9 | * | * | 7 | 4.4 | 8 | 5.0 |
| Bristol City [†] | 71,177 | 0 | 0 | * | * | * | * | 0 | 0 | 0 | 0 |
| Buena Vista City [†] | 36,092 | * | * | * | * | * | * | * | * | 0 | 0 |
| Charlottesville City [†] | 155,721 | * | * | 7 | 10.3 | * | * | * | * | 6 | 10.3 |
| Chesapeake City | 240,397 | 17 | 7.1 | 22 | 9.2 | 19 | 7.9 | 19 | 7.9 | 15 | 6.2 |
| Colonial Heights City [†] | 361,429 | * | * | * | * | * | * | * | * | 5 | 13.8 |
| Covington City [†] | 20,653 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Danville City [†] | 102,388 | 7 | 9.8 | 8 | 12.7 | 14 | 15.6 | 10 | 16.6 | 10 | 14.7 |
| Emporia City [†] | 16,961 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fairfax City [†] | 1,187,113 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Falls Church City [†] | 1,187,113 | * | * | 0 | 0 | * | * | * | * | * | * |
| Franklin City [†] | 25,926 | * | * | * | * | * | * | * | * | * | * |
| Fredericksburg City | 28,360 | * | * | * | * | 0 | 0 | 0 | 0 | * | * |
| Galax City [†] | 22,290 | * | * | * | * | * | * | * | * | * | * |
| Hampton City | 134,669 | 10 | 7.4 | 14 | 10.4 | 9 | 6.7 | 5 | 3.7 | 5 | 3.7 |
| Harrisonburg City [†] | 134,442 | * | * | * | * | * | * | * | * | * | * |
| Hopewell City [†] | 92,180 | * | * | * | * | 6 | 8.7 | * | * | 5 | 10.8 |
| Lexington City [†] | 36,092 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lynchburg City | 80,995 | 7 | 8.6 | 10 | 12.3 | 10 | 12.3 | 9 | 11.1 | 7 | 8.6 |
| Manassas City [†] | 521,115 | * | * | * | * | * | * | 5 | 5.0 | * | * |
| Manassas Park City [†] | 521,115 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Martinsville City [†] | 64,369 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| Locality | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|------------------------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Newport News City | 179,388 | * | * | 7 | 3.9 | 6 | 3.3 | 7 | 3.9 | 5 | 2.8 |
| Norfolk City | 244,703 | 19 | 7.8 | 21 | 8.6 | 28 | 11.4 | 18 | 7.4 | 18 | 7.4 |
| Norton City [†] | 42,522 | * | * | 0 | 0 | * | * | * | * | 0 | 0 |
| Petersburg City [†] | 92,180 | * | * | 10 | 18.4 | * | * | * | * | * | * |
| Poquoson City | 12,053 | * | * | * | * | 0 | 0 | 0 | 0 | 0 | 0 |
| Portsmouth City | 94,572 | 15 | 15.9 | 13 | 13.7 | 12 | 12.7 | 17 | 18.0 | 21 | 22.2 |
| Radford City [†] | 116,217 | 0 | 0 | * | * | * | * | * | * | * | * |
| Richmond City | 227,032 | 32 | 14.1 | 32 | 14.1 | 34 | 15.0 | 34 | 15.0 | 47 | 20.7 |
| Roanoke City [†] | 219,429 | 13 | 12.3 | 10 | 10.5 | 11 | 14.1 | 19 | 16.4 | 41 | 27.3 |
| Salem City [†] | 219,429 | 5 | 12.3 | 5 | 10.5 | 10 | 14.1 | 5 | 16.4 | 8 | 27.3 |
| Staunton City [†] | 121,999 | * | * | * | * | * | * | 6 | 12.3 | * | * |
| Suffolk City | 90,237 | 6 | 6.6 | 5 | 5.5 | 7 | 7.8 | * | * | * | * |
| Virginia Beach City | 450,435 | 14 | 3.1 | 18 | 4.0 | 13 | 2.9 | 21 | 4.7 | 16 | 3.6 |
| Waynesboro City [†] | 121,999 | 0 | 0 | 5 | 9.0 | * | * | 8 | 12.3 | 7 | 13.9 |
| Williamsburg City | 15,031 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Winchester City [†] | 114,416 | 8 | 11.4 | 8 | 7.9 | 8 | 9.6 | * | * | 9 | 10.5 |
| VIRGINIA TOTAL | 8,470,020 | 601 | 7.1 | 641 | 7.6 | 613 | 7.2 | 633 | 7.5 | 726 | 8.6 |

[†] Population based on 2017 U.S. Census estimates available at www.census.gov/popest/

[‡] The rate per 100,000 population for each locality within a combined group is based on the aggregated total population of the combined group. Refer to [Appendix 1](#) for the list of localities that are combined.

* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

¶ Refer to [Appendix 2](#) for a summary of data reporting changes that should be considered when interpreting this report.

Table 1C. Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Opioid or Unspecified Substance among Virginia Residents by Month and Virginia State Police Division, Most Recent 5 Months^{†*§}

| VSP Division | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|----------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Division 1 | 1,428,275 | 136 | 9.5 | 153 | 10.7 | 160 | 11.2 | 151 | 10.6 | 209 | 14.6 |
| Division 2 | 855,345 | 66 | 7.7 | 65 | 7.6 | 53 | 6.2 | 50 | 5.8 | 55 | 6.4 |
| Division 3 | 661,189 | 40 | 6.0 | 56 | 8.5 | 50 | 7.6 | 55 | 8.3 | 73 | 11.0 |
| Division 4 | 432,668 | 54 | 12.5 | 54 | 12.5 | 49 | 11.3 | 49 | 11.3 | 46 | 10.6 |
| Division 5 | 1,819,485 | 98 | 5.4 | 120 | 6.6 | 112 | 6.2 | 108 | 5.9 | 99 | 5.4 |
| Division 6 | 771,750 | 80 | 10.4 | 79 | 10.2 | 85 | 11.0 | 98 | 12.7 | 132 | 17.1 |
| Division 7 | 2,501,308 | 127 | 5.1 | 114 | 4.6 | 104 | 4.2 | 122 | 4.9 | 112 | 4.5 |
| VIRGINIA TOTAL | 8,470,020 | 601 | 7.1 | 641 | 7.6 | 613 | 7.2 | 633 | 7.5 | 726 | 8.6 |

† Population based on 2017 U.S. Census estimates available at www.census.gov/popest/

* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

§ Virginia State Police Divisions available at http://www.vsp.state.va.us/Office_Locations.shtm

¶ Refer to [Appendix 2](#) for a summary of data reporting changes that should be considered when interpreting this report.

Emergency Department Visits for Unintentional Overdose by Heroin among Virginia Residents

Figure 2A. Count of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month, 2016 – 2018.

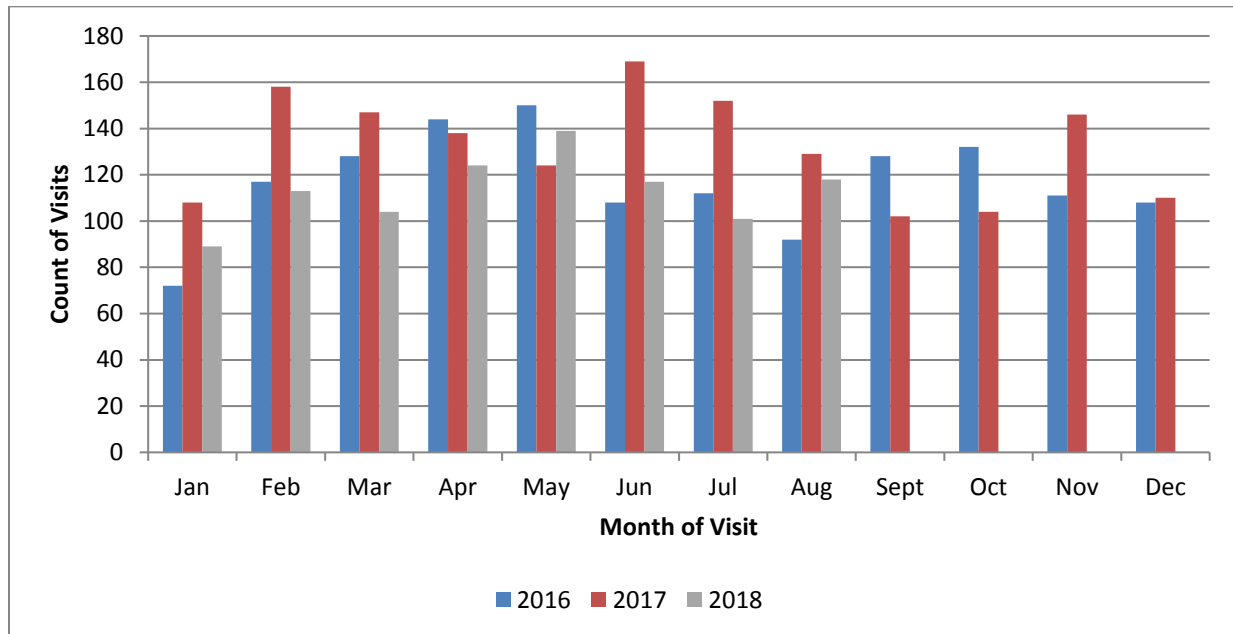


Figure 2B. Year-to-Date Count (January-August) of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Year.

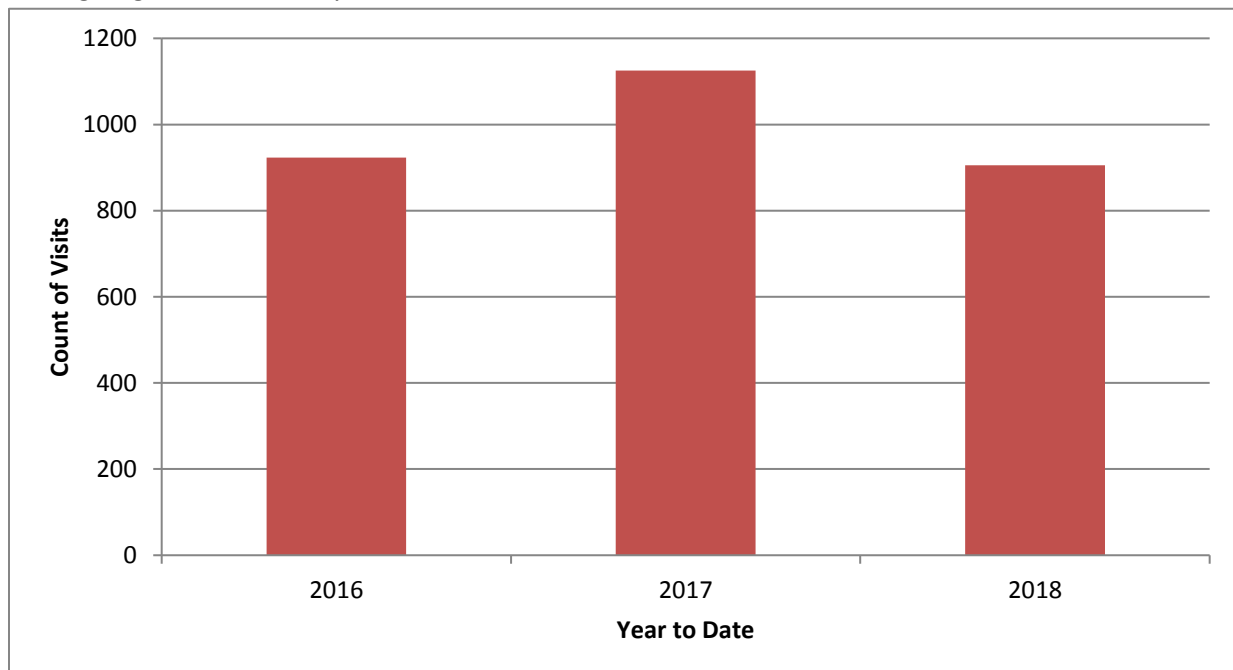


Figure 2C. Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Health Region, Most Recent 12 Months.

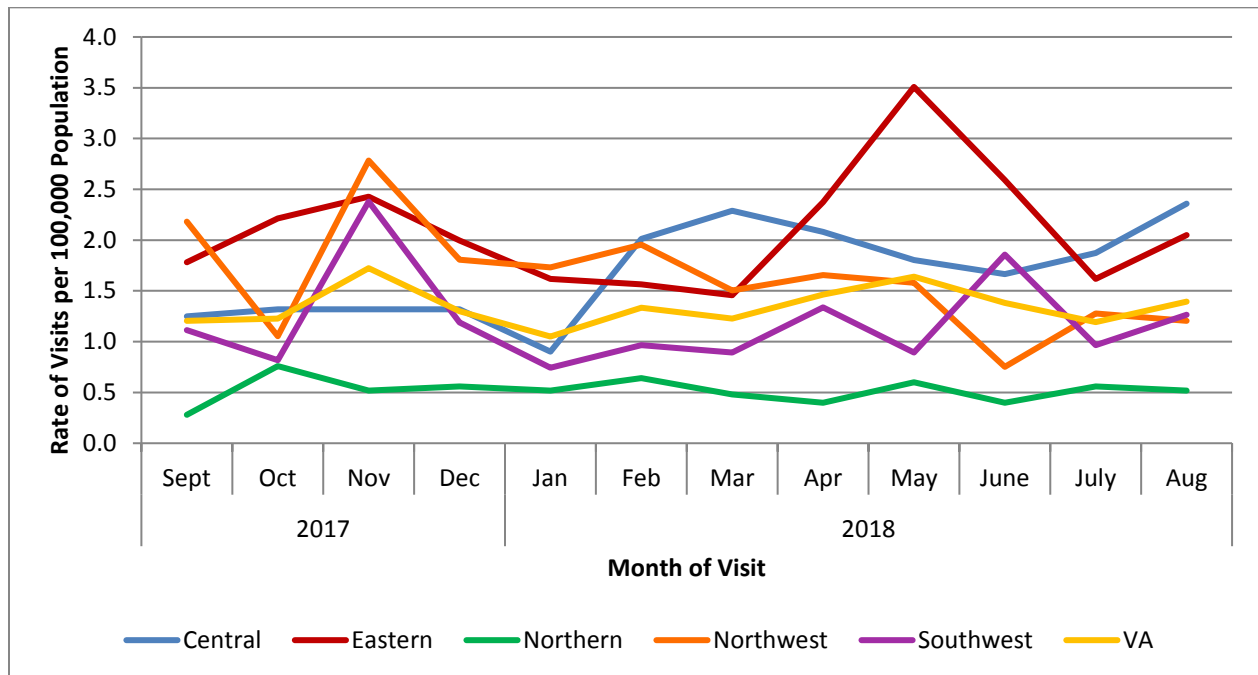


Figure 2D. Year-to-Date Count (January-August) of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Year and Region.

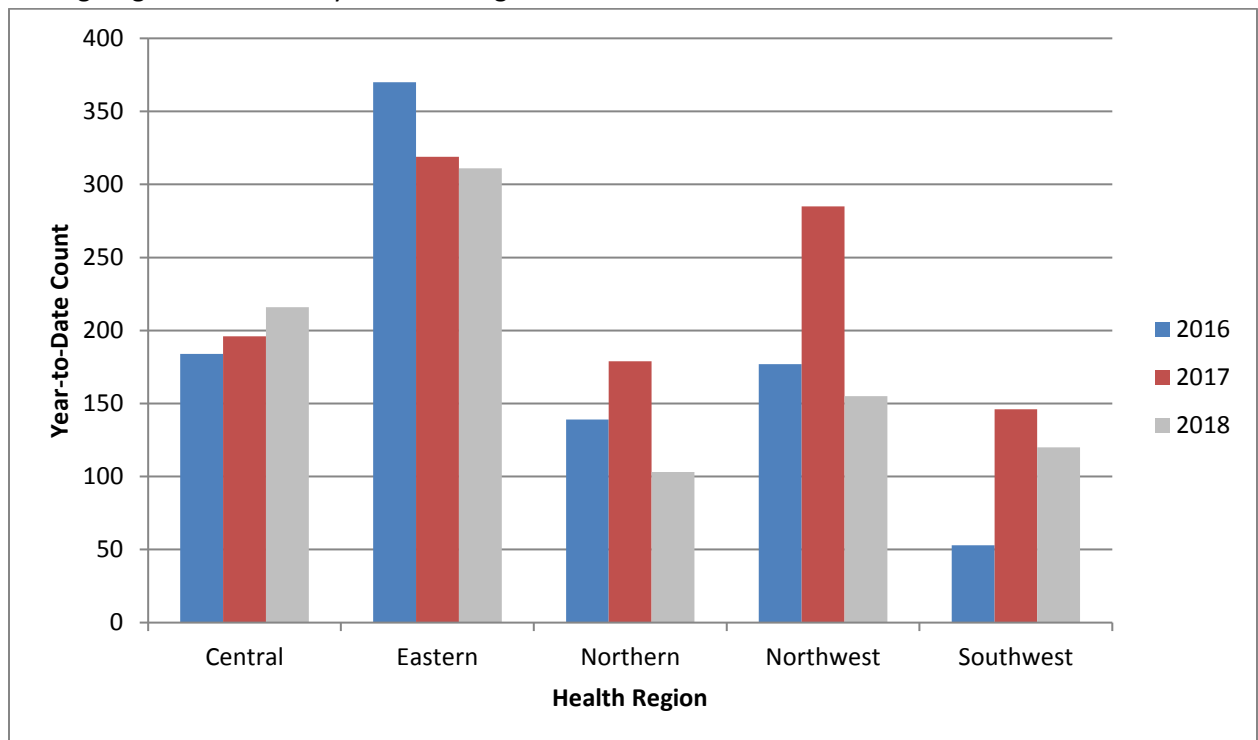


Figure 2E. Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Sex, Most Recent 12 Months.

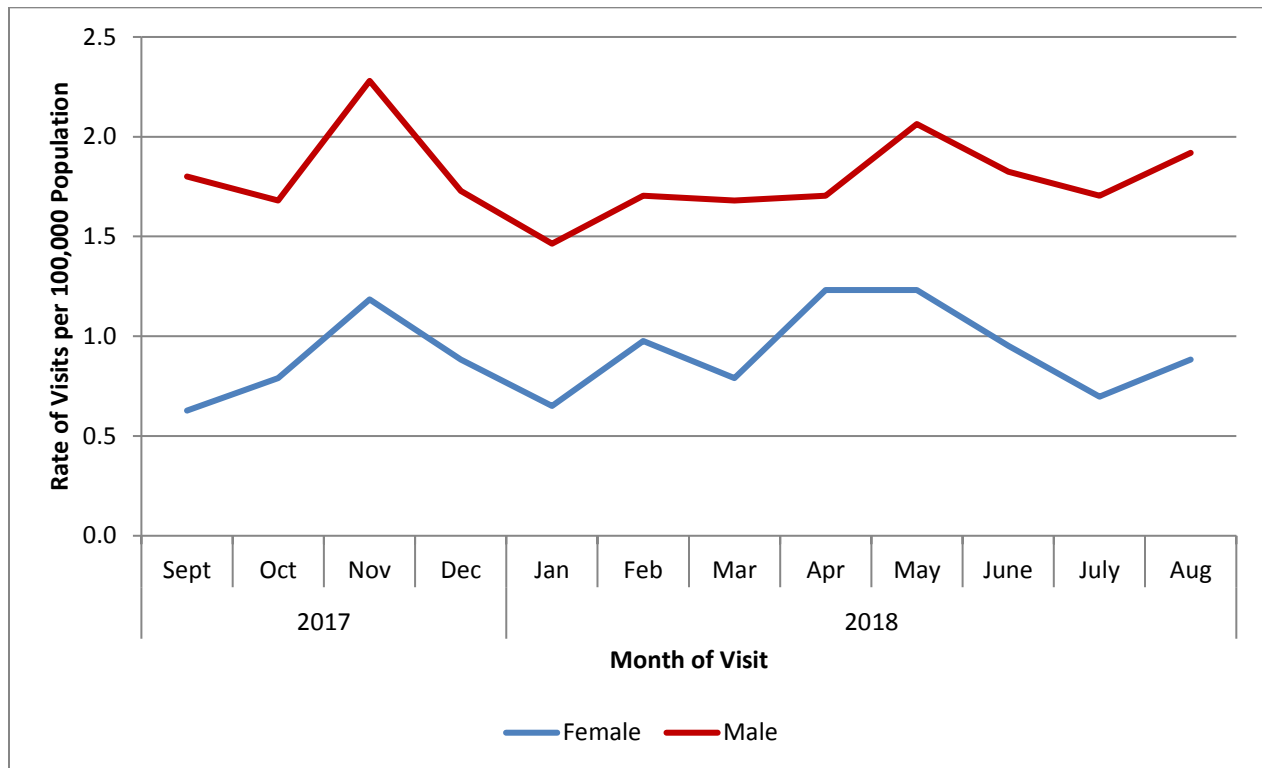


Figure 2F. Rate of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Age Group (Years), Most Recent 12 Months.

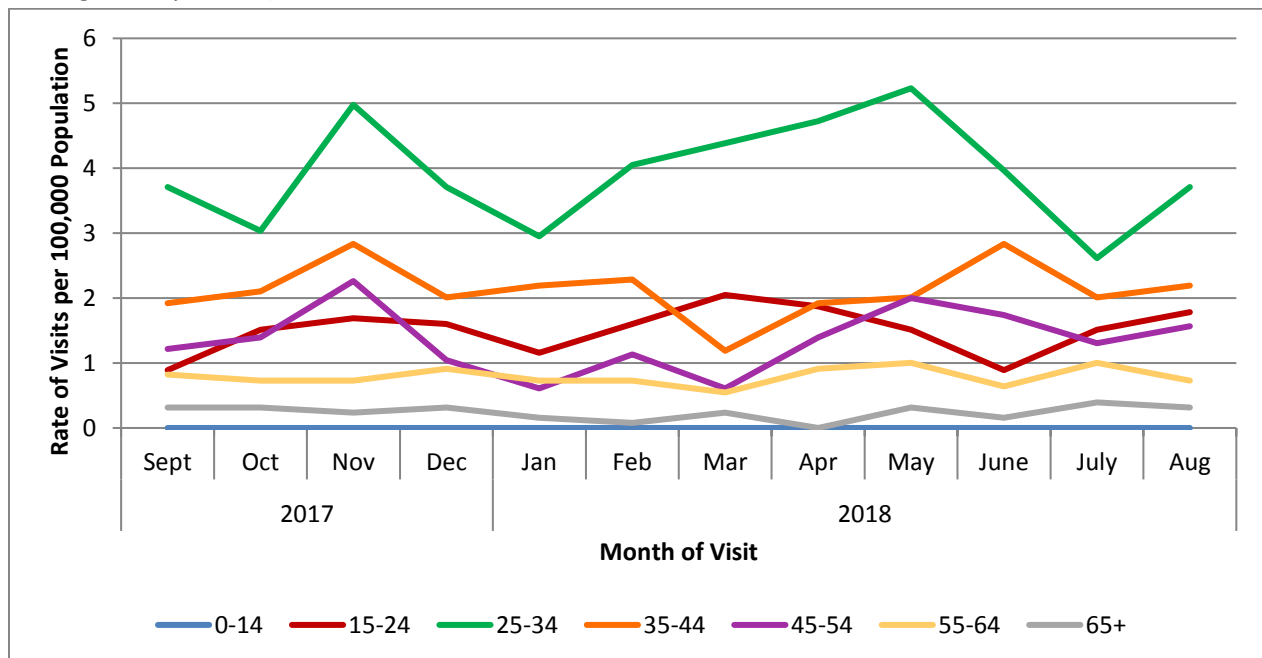


Table 2A. Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Health District, Most Recent 5 Months[†]

| Health District | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | | 5-month Average | |
|-----------------------|--------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|--------------------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count [^] | Rate |
| Alexandria | 160,035 | * | * | 0 | 0 | 0 | 0 | * | * | * | * | 1 | 0.4 |
| Alleghany | 178,499 | 5 | 2.8 | * | * | 9 | 5.0 | * | * | * | * | 5 | 2.7 |
| Arlington | 234,965 | 0 | 0 | 0 | 0 | * | * | 0 | 0 | 0 | 0 | 0 | 0.1 |
| Central Shenandoah | 299,042 | * | * | * | * | * | * | 5 | 1.7 | * | * | 3 | 0.9 |
| Central Virginia | 261,254 | * | * | * | * | * | * | 0 | 0 | * | * | 1 | 0.5 |
| Chesapeake | 240,397 | 11 | 4.6 | 12 | 5.0 | 6 | 2.5 | 5 | 2.1 | * | * | 7 | 3.0 |
| Chesterfield | 390,030 | 5 | 1.3 | * | * | 7 | 1.8 | * | * | 10 | 2.6 | 6 | 1.5 |
| Chickahominy | 157,294 | * | * | * | * | * | * | * | * | * | * | 2 | 1.5 |
| Crater | 155,262 | 5 | 3.2 | * | * | 6 | 3.9 | * | * | 5 | 3.2 | 4 | 2.8 |
| Cumberland Plateau | 104,439 | 0 | 0 | 0 | 0 | 0 | 0 | * | * | 0 | 0 | 0 | 0.2 |
| Eastern Shore | 44,391 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Fairfax | 1,187,113 | 8 | 0.7 | 7 | 0.6 | 5 | 0.4 | 9 | 0.8 | 5 | 0.4 | 7 | 0.6 |
| Hampton | 134,669 | * | * | 5 | 3.7 | * | * | * | * | 5 | 3.7 | 4 | 2.7 |
| Henrico | 327,898 | 12 | 3.7 | 8 | 2.4 | 8 | 2.4 | 10 | 3.0 | * | * | 8 | 2.6 |
| Lenowisco | 88,145 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| Lord Fairfax | 235,443 | 5 | 2.1 | * | * | 5 | 2.1 | * | * | 5 | 2.1 | 4 | 1.8 |
| Loudoun | 398,080 | * | * | * | * | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0.2 |
| Mount Rogers | 189,063 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.0 |
| New River | 182,993 | * | * | 0 | 0 | * | * | 0 | 0 | * | * | 2 | 0.9 |
| Norfolk | 244,703 | 11 | 4.5 | 15 | 6.1 | 13 | 5.3 | 9 | 3.7 | 13 | 5.3 | 12 | 5.0 |
| Peninsula | 349,735 | 0 | 0 | * | * | * | * | * | * | * | * | 2 | 0.6 |
| Piedmont | 102,387 | 0 | 0 | * | * | * | * | * | * | 0 | 0 | 1 | 0.8 |
| Pittsylvania-Danville | 102,388 | 0 | 0 | 0 | 0 | 0 | 0 | * | * | 0 | 0 | 0 | 0.2 |
| Portsmouth | 94,572 | * | * | 12 | 12.7 | 10 | 10.6 | * | * | 7 | 7.4 | 7 | 7.8 |
| Prince William | 521,115 | 0 | 0 | 6 | 1.2 | * | * | * | * | 7 | 1.3 | 4 | 0.8 |
| Rappahannock | 364,840 | 8 | 2.2 | 10 | 2.7 | * | * | * | * | * | * | 5 | 1.3 |
| Rappahannock-Rapidan | 177,418 | * | * | 5 | 2.8 | * | * | 5 | 2.8 | * | * | 4 | 2.4 |
| Richmond City | 227,032 | 6 | 2.6 | 6 | 2.6 | * | * | 5 | 2.2 | 10 | 4.4 | 6 | 2.5 |
| Roanoke | 99,837 | 8 | 8.0 | 6 | 6.0 | 9 | 9.0 | 7 | 7.0 | 8 | 8.0 | 8 | 7.6 |
| Southside | 81,493 | * | * | 0 | 0 | 0 | 0 | * | * | * | * | 1 | 0.7 |
| Thomas Jefferson | 252,588 | * | * | * | * | 0 | 0 | * | * | * | * | 2 | 0.6 |
| Three Rivers | 141,271 | * | * | * | * | * | * | * | * | 0 | 0 | 1 | 1.0 |
| Virginia Beach | 450,435 | 10 | 2.2 | 13 | 2.9 | 7 | 1.6 | 7 | 1.6 | 5 | 1.1 | 8 | 1.9 |
| West Piedmont | 138,479 | * | * | * | * | * | * | * | * | * | * | 1 | 1.0 |
| Western Tidewater | 152,715 | * | * | * | * | * | * | * | * | 5 | 3.3 | 3 | 1.8 |
| VIRGINIA TOTAL | 8,470,020 | 124 | 1.5 | 139 | 1.6 | 117 | 1.4 | 101 | 1.2 | 118 | 1.4 | 120 | 1.4 |

[†] Population based on 2017 U.S. Census estimates available at www.census.gov/popest/

* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

[^] The 5-month average count was rounded to the nearest integer.

¶ Refer to [Appendix 2](#) for a summary of data reporting changes that should be considered when interpreting this report.

Table 2B. Count and Rate per 100,000 Population of ED Visits for Unintentional Overdose by Heroin among Virginia Residents by Month and Virginia State Police Division, Most Recent 5 Months^{†*§}

| VSP Division | 2017 Population Estimate | Apr 2018 | | May 2018 | | June 2018 | | July 2018 | | Aug 2018 | |
|----------------|--------------------------------|----------|------|----------|------|-----------|------|-----------|------|----------|------|
| | | Count | Rate | Count | Rate | Count | Rate | Count | Rate | Count | Rate |
| Division 1 | 1,428,275 | 30 | 2.1 | 29 | 2.0 | 21 | 1.5 | 26 | 1.8 | 33 | 2.3 |
| Division 2 | 855,345 | 17 | 2.0 | 17 | 2.0 | 9 | 1.1 | 11 | 1.3 | 12 | 1.4 |
| Division 3 | 661,189 | * | * | * | * | * | * | 8 | 1.2 | * | * |
| Division 4 | 432,668 | * | * | 0 | 0 | * | * | * | * | * | * |
| Division 5 | 1,819,485 | 45 | 2.5 | 64 | 3.5 | 50 | 2.7 | 29 | 1.6 | 40 | 2.2 |
| Division 6 | 771,750 | 17 | 2.2 | 11 | 1.4 | 24 | 3.1 | 12 | 1.6 | 16 | 2.1 |
| Division 7 | 2,501,308 | 10 | 0.4 | 15 | 0.6 | 10 | 0.4 | 14 | 0.6 | 13 | 0.5 |
| VIRGINIA TOTAL | 8,470,020 | 124 | 1.5 | 139 | 1.6 | 117 | 1.4 | 101 | 1.2 | 118 | 1.4 |

† Population based on 2017 U.S. Census estimates available at www.census.gov/popest/

* Visit counts of 1 to 4 and rates with numerators of 1 to 4 are suppressed to maintain confidentiality and accurate rate calculations.

§ Virginia State Police Divisions available at http://www.vsp.state.va.us/Office_Locations.shtm

¶ Refer to [Appendix 2](#) for a summary of data reporting changes that should be considered when interpreting this report.

Appendix 1

Virginia Localities Combined for the Purposes of Rate Calculation per 100,000 Population

- Alleghany County and Covington City
- Albemarle County and Charlottesville City
- Augusta County, Staunton City, and Waynesboro City
- Chesterfield County and Colonial Heights City
- Frederick County and Winchester City
- Fairfax County, Fairfax City, and Falls Church City
- Grayson County and Galax City
- Greenville County and Emporia City
- Henry County and Martinsville City
- Montgomery County and Radford City
- Pittsylvania County and Danville City
- Prince George County, Hopewell City, and Petersburg City
- Prince William County, Manassas City, and Manassas Park City
- Roanoke County, Roanoke City, and Salem City
- Rockingham County and Harrisonburg City
- Rockbridge County, Buena Vista City, and Lexington City
- Southampton County and Franklin City
- Washington County and Bristol City
- Wise County and Norton City

Appendix 2

Summary of Data Reporting Changes by Emergency Departments in Virginia

The volume and quality of data reported by emergency departments to the Virginia Department of Health for syndromic surveillance affect the volume and quality of data in this report. In general, volume and quality have improved over time as additional EDs report to the Virginia Department of Health. This general increase in data volume should be taken into consideration when interpreting trends in visit counts and rates over time. Occasionally, EDs stop reporting data, which can lead to a decrease in data volume and a lowering of trends. Other factors that can affect the data are changes in the quality reported by EDs, which can improve or reduce the accuracy of the data.

Please consider the following data reporting changes when interpreting the contents of *Emergency Department Visits for Overdose by Opioid, Unspecified Substance and Heroin among Virginia Residents* reports.

| Month | Health Region | Description |
|---------------|---------------|---|
| June 2017 | Eastern | A single healthcare system representing five acute care hospital EDs became unable to report data, reducing the quantity and representativeness of the data from this region. |
| June 2017 | Northwest | One acute care hospital ED improved its data quality, supporting more accurate capture of overdose visit data. |
| February 2018 | Central | One additional acute care hospital ED began reporting data to VDH, increasing the quantity and representativeness of data from this region. |
| March 2018 | Central | Four additional free-standing EDs began reporting data to VDH, increasing the quantity and representativeness of data from this region. |
| April 2018 | Southwest | Two additional acute care hospital EDs began reporting data to VDH, increasing the quantity and representativeness of data from this region. |
| April 2018 | Northern | One acute care hospital ED became unable to report data, reducing the quantity and representativeness of the data from this region. Update: This hospital ED began reporting data again to VDH as of the June 2018 report. |
| June 2018 | Northwest | Two acute care hospital EDs and one free-standing ED became unable to report data, reducing the quantity and representativeness of the data from this region. Update: These hospital EDs began reporting data again to VDH as of the August 2018 report. |

